PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH
COLUMBIA

A Reconnaissance Survey of Canty Lake

D. A. Jesson
1990

PWFWCP Report No. 87

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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105-02919/

A RECONNAISSANCE SURVEY OF

CANTY LAKE

WATERSHED: Parsnip River

DATE OF SURVEY: July 4. 1989

FIELD CREW LEADER: D. A. Jesson

FIELD ASSISTANT: M. G. Labach

REPORT PREPARED BY: D. A. Jesson

WILLISTON FISHERIES PROJECT

B. C. HYDRO

ENVIRONMENTAL RESOURCES

and

MINISTRY OF ENVIRONMENT

RECREATIONAL FISHERIES BRANCH

RELEASEDBY: _____

D.H.G. Ableson, Regional Fisheries Biologist

LAKE: CANTY

SYSTEM NAME: CANTY C.

A.S.A.P. REFERENCE NO.:

SYSTEM NO. 25-****

DATA ON FILE FOR THIS SURVEY

Location	x	Dissolved 02/Temp. Profiles	x
Physical Data	x	Netting Record	x
Bench Mark	x	Lake Catch Summary	x
Terrain Features	x	Individual Fish Data	-
Access	x	Fish Preserved	-
Resorts and Campsites	x	Stomach Analysis	-
Other Developments	x	Scale Reading	-
Obstructions and Pollutions	x	Location of Inventory Sites	x
Special Restrictions	x	Photograph Directory	x
Aquatic Plants	x	Appendices:	
Wildlife Observations	x	A: Water Chemistry Analysis	x
Miscellaneous Comments	x	B: Tributary Stream Data	x
Lake Drainage	x	Bathymetric Map Reduction	x
Fisheries Management Comments	x	Bathymetric Map	x
History of Previous Surveys	x		
Water Chemistry Summary	x		

LOCATION

Location:	78 km North of Mackenzie		
Elevation:	1,295 m +/-		
Latitude/Longitude:	55°57'21":123°42'23"	U.T.M.:	10.4559.62011
Management Unit:	7-30	N.T.S. Map No.:	930/13

Drainage: Canty C. –> subterranean flow –> swamp –> Williston Lake (Parsnip Reach) –> Peace R.

PHYSICAL DATA

Lake Drainage Area:	- km^2	Volume:	218,000 m^3
Water Surface Area:	75,000 m^2	Flushing Rate:	-
Area above 6 m contour:	66,000 m^2	Perimeter of Islands:	- m
Shoreline Perimeter:	1,330 m	Number of Islands:	0
Maximum Depth:	9.4 m	Mean Depth:	2.9 m
Filterable Residue (TDS):	116 mg/l	Secchi Disc:	7.65 m

Sounding Device: Lowrance X-15 Elevation Source: Contour interpolation

BENCHMARK

(Iron spike, center of red circle) located 2.0 m above the present water level in a 20 cm spruce tree, located on the NE shore of the lake. The tree is approximately 10 m from the water's edge.

High water mark: Not apparent. Lake appears to be at maximum pondage.

Lake: **CANTY**

TERRAIN FEATURES

Immediate Shoreline:

Shoreline slope to the water's edge ranges from moderately steep to steep in all areas except for the NE and SW ends which are flat marsh. The SW end is flat for about 150 m before dropping steeply down a mountain face. The lake is treed to the water's edge with a complete coniferous forest of stunted spruce, balsam fir and Lodgepole pine, except for marsh areas, which consist of willow, stunted conifers and sedge grass. Alder trees are sporadically distributed along the shoreline. Boating access is fair to good with the occasional deadfall and large boulder occurring near shore. However, it is highly unlikely for someone to hike up the steep trail to Canty Lake (normally a 3 hour hike) with a boat or canoe. Recreational access to the lake is best at the outlet end of the lake at the head of the trail adjacent to the undeveloped campsite. The lake bottom drops off quickly from shore except where there are shallows at the ends of the lake. Shoreline substrate ranges from sand to cobble originating from broken igneous rock and shale. The forest floor near the shore consists of moss and lichen growing on a thin organic layer overlying bedrock and shale.

Surrounding Country:

Canty Lake is a subalpine lake situated within the Misinchinka Ranges of the Rocky Mountains. The lake is confined by two steep mountain ridges along its NW and SE shores. The forest cover is complete and consists of a mature, first growth coniferous forest of spruce, balsam fir and Lodgepole pine. Snow covered peaks are visible to the east and south approximately 1-5 km from the lake. Bedrock outcrops are present along the north shore 10 - 100 m from the lake.

Canty Lake is situated within the Engelmann spruce - subalpine fir biogeoclimatic zone.

Lake: **CANTY**

ACCESS

Directions:

Canty Lake is approximately a 10 minute helicopter flight from the Finlay Forks area of Williston Lake.

Alternatively, one can drive from MacKenzie and hike in by trail. The following access information is derived from NTS maps 930/6, 930/11, 930/12 and 930/13 with distances obtained from the maps by map wheel:

From MacKenzie, at the junction of MacKenzie Boulevard and Centennial Drive, travel north on MacKenzie Boulevard/Highway 39. On the outskirts of Mackenzie (where gravel begins) the road becomes known as the Finlay Forks Forest Development Road. At 85.5 km turn right onto an unnamed road and travel 2.75 km east to the end of the road. A 2.25 km trail up a steep mountainside leads to Canty Lake.

Road Type and Conditions:

The Finlay Forks Forest Development Road is a fair 2 wheel drive gravel logging road. According to Jim Ladds, Forest Recreation Officer in MacKenzie, the four wheel drive access road to the trail is a rough, good weather only road, while the access trail is in fair condition with some muddy areas. The trail is very steep with a gradient of approximately 25% (as derived from NTS map 930/13).

Post survey note: The unnamed road leading to the trail head was upgraded by MacKenzie Forest Service in summer, 1990.

Restrictions:

No restrictions were noted.

RESORTS AND CAMPSITES

There is an undeveloped campsite located at the SW end of the lake at the head of the trail. Local knowledge indicates this is an old caribou hunters' camp.

OTHER DEVELOPMENTS

A horse corral has been built adjacent to the campsite.

Lake: **CANTY**

OBSTRUCTIONS AND POLLUTIONS

A series of water falls on the outlet start approximately 175 m downstream of the lake and continue down the mountainside for the length of the stream. The falls are definite barriers to upstream fish migration.

Some unsightly debris (old torn up tarp, cans, old dinner plates) are strewn around the campsite located at the SW end of the lake.

SPECIAL RESTRICTIONS

No special restrictions were noted, however, Jim Ladds, MacKenzie Forest Service Resource Officer, did indicate the Canty Lake/Mount Selwyn area was receiving consideration as a possible wilderness reserve.

AQUATIC PLANTS

One unidentified species of aquatic plant was found sparsely populating the littoral area of Canty Lake, especially the NE and SW ends, in organic substrate. The plant was approximately 5 to 6 cm in height and grew 3-dimensionally.

Sedge grass and Equisetum fluviatile were the only other species noted.

WILDLIFE OBSERVATIONS

Moose tracks and droppings were observed.

MISCELLANEOUS COMMENTS

Bathymetric map: The lake outline is from an enlargement of aerial photograph BC 80028 No. 092, flown June 1980.

Gammarus (attached to gillnet) were noted.

The outlet of Canty Lake serves as a source of water for Roxanne and Bob Barton. Their cabin is located just south of Mile 94 on the Finlay Forks Forest Development Road. Water is hauled from the Bartons for domestic use at Finlay Bay Cabins.

Canty Lake was the former location of a Caribou hunters' base camp.
There are unconfirmed reports that Canty Lake at one time was unofficially stocked with rainbow trout, by a member of the general public.

Lake: **CANTY**

LAKE DRAINAGE

General:

Canty Lake has several intermittent inlets and one outlet. Recent heavy rain resulted in runoff into Canty Lake via the intermittent inlets. The outlet flows east 2 km down a steep mountainside to a low-lying area adjacent to Williston Lake.

Major Systems:

There are no major systems.

Minor Systems:

Unnamed C. - inlet #1

This small, intermittent creek enters the lake at the east end. It drains a low-lying forested area approximately 50 m upstream from the lake. Recent heavy rain has produced a flow. There is no salmonid spawning or rearing habitat.

Unnamed C. - inlet #2

This small, intermittent creek enters the lake along its south shore. The creek flows off of a steep hillside at a gradient of 20%, offering no fish habitat. Flows were the result of recent rain.

Unnamed C. - inlet #3

This inlet creek drains a marsh area at the NE end of the lake. At high water, the marsh is also known to drain east into Colin Creek (Dave Coombes, Recreational Fisheries, Victoria, personal communication). There is no fish habitat.

Unnamed C. - outlet

This creek drains the lake at the SW end. The first 100 m of stream, gradients range from 0.5 to 2.0%. This increases to upwards of 35% approximately 150 m to 175 m downstream of the lake as the stream plummets down a steep bedrock mountainside. Fair to good salmonid spawning and rearing habitat is present for the first 100 m of stream.

Refer to stream data sheets for additional outlet information.

Lake: **CANTY**

FISHERIES MANAGEMENT COMMENTS

Canty Lake is a barren headwater, subalpine lake. A suitable oxygen and temperature profile indicates stocking with rainbow trout, or a species able to withstand subalpine lake conditions, such as yellowstone cutthroat, be undertaken. This lake should be managed for a low use fishery with 1500 - 2500 trout initially stocked. The outlet has some salmonid spawning habitat for the first 100 - 150 m and should provide recruitment back to the lake. With the lack of accessible subalpine lakes in the region, Canty Lake offers an unique outdoors experience.

Post survey note:

Oxygen/temperature readings conducted on Canty Lake on February 27, 1990 indicate winter oxygen levels are relatively high (appear to be near saturation). It is recommended stocking go ahead as planned with rainbow or cutthroat trout, as winter kill is unlikely (See following page for results).

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

None known.

Other Related Surveys:

None known.

Lake: **CANTY**

April 23, 1990

Re: Canty Lake Winter Oxygen

On February 27, 1990, Bob Westcott and myself conducted oxygen/temperature profiles at the limnology station on Canty Lake in order to determine the feasibility of stocking rainbow or cutthroat trout into the lake. The following results were obtained.

Depth(m)	02(mg/1)	Temp(°C)
Surface		
1.0	Bottom of ice	
1.1	10.2	2.4
2.0	9.2	3.5
3.0	7.9	3.8
4.0	7.3	3.9
5.0	6.5	4.0
6.0	5.9	4.2
7.0	5.1	4.5
7.5	4.1	4.6
8.4	Bottom	

Time:	1300 hrs	Air temp:	1°C
Ice cover:	1.0 m	Snow cover:	20 cm
Max. Depth:	8.4 m		

Depth readings are referenced from top of ice. i.e. surface = top of ice.
Method: YSI model 58 oxygen/temp. meter

Duane A. Jesson
Williston Lake Fisheries Technician

Lake: **CANTY**

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions:

Date:	July 4, 1989		
Time:	1330 hrs	Air Temperature:	9°C
Wind Velocity:	5 to 10 km/hr	Wind Direction:	East
Cloud Cover:	10/10 O.C.	Surface Condition:	slight ripple
Secchi Disc:	7.65 m	Water Colour:	turquoise

Method(s) Used:

Dissolved Oxygen:	YSI model 58 oxygen/temperature meter
Water Temperature:	YSI model 58 oxygen/temperature meter
Air Temperature:	Hand-held alcohol thermometer
pH (field):	Hach colour comparitor
H2S (field):	Hach H2S field test kit
Laboratory Used:	Zenon Environmental Inc. B.C. Laboratory Services
Water Sampler:	Verticle Alpha Water Bottle (Vandorn)
Substrate Sampler:	substrate sample not taken

Water Sample Chemistry: SEAM Site No. Not determined

	Sampling Depths	
	Surface (0 m)	Lower (9.0 m)
pH (field)	7.7	7.7
pH (lab)	8.0	7.9
Specific Conductance (lab):	199 umhos/c	199 umhos/cm
Filterable Residue 105°C (lab):	116 mg/l	108 mg/l
H2S (field)	- mg/l	0 mg/l

Bottom Depth: 9.4 m
Substrate Sample Depth: - m

Lake: **CANTY**

OXYGEN/TEMPERATURE DATA

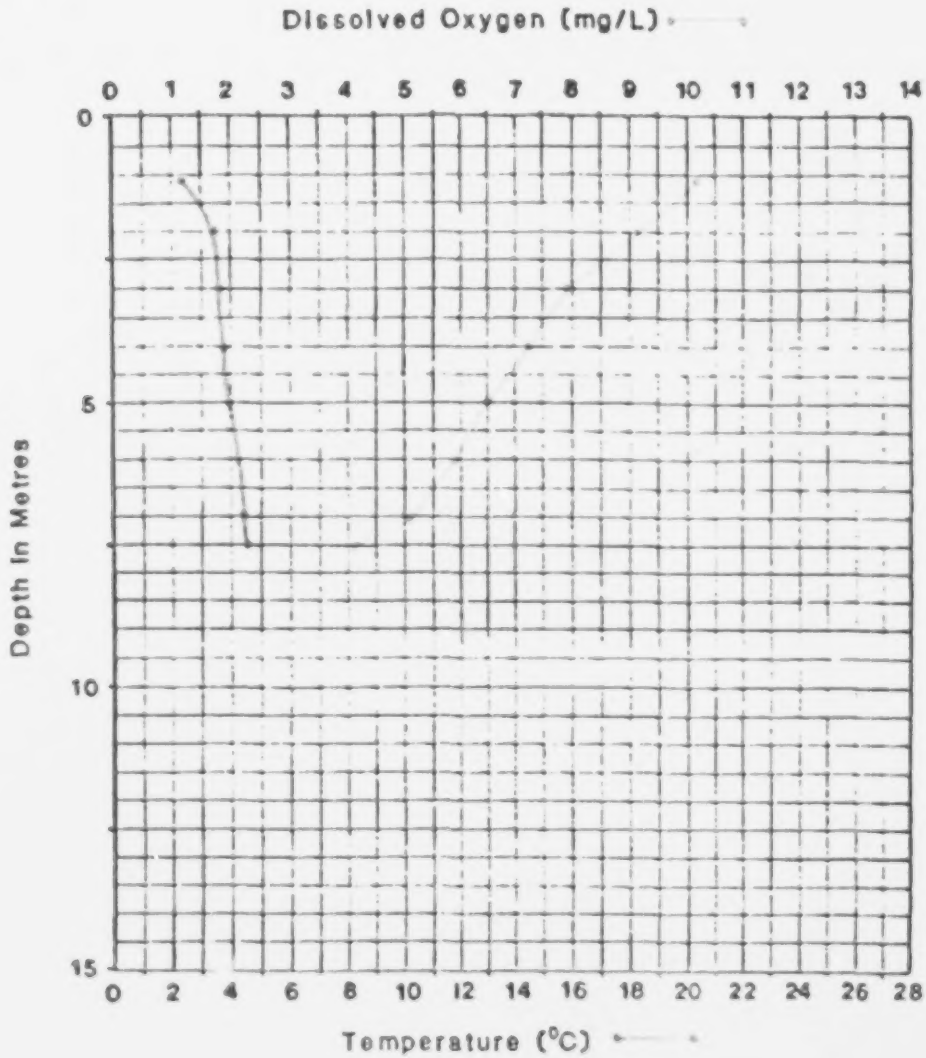
Depth (m)	02 (mg/l)	Temp (°C)
Surface	8.3	12.1
1.0	8.5	12.1
2.0	7.5	12.0
3.0	8.2	11.8
4.0	8.5	11.0
5.0	8.4	10.6
6.0	8.6	10.3
7.0	8.9	10.0
8.0	8.9	9.9
9.0	9.4	9.6
9.4	Bottom	

LAKE: Canty

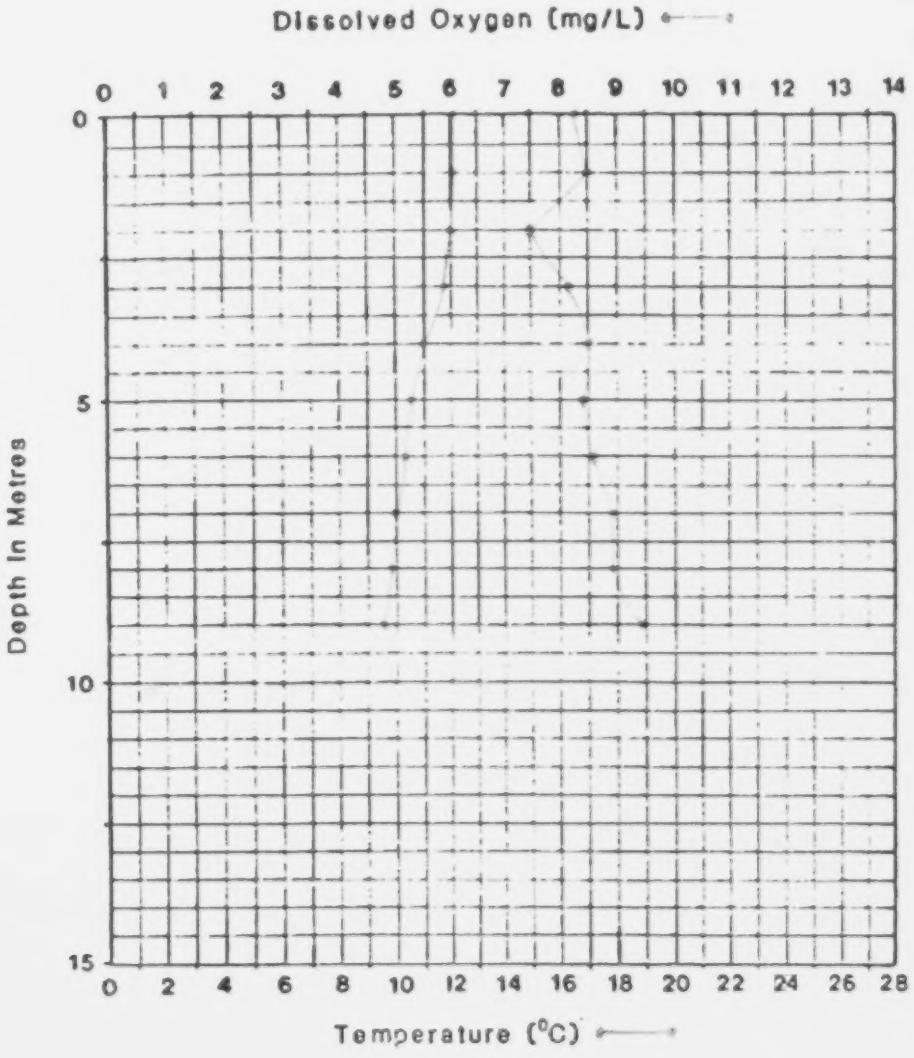
DATE: February 27, 1990

WINTER

DISSOLVED OXYGEN AND TEMPERATURE PROFILE



DISSOLVED OXYGEN AND TEMPERATURE PROFILE



Lake: **CANTY**

NETTING RECORD

Mesh sizes experimental order: 25,76,51,89,38,64 mm.

NETTING SITE #1

Type:	Sinking Monofilament		
Date Set:	July 4, 1989	Time:	0930 hrs
Date lifted:	July 4, 1989	Time:	1530 hrs
Net Dimensions:	Length: 91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm	Depth:	1.5 m
		Substrate:	cobble,gravel,sand mix
Deep End Mesh Size:	64 mm	Depth:	9.0 m
		Substrate:	organics

Comments:

No fish caught in net.

Lake: **CANTY**

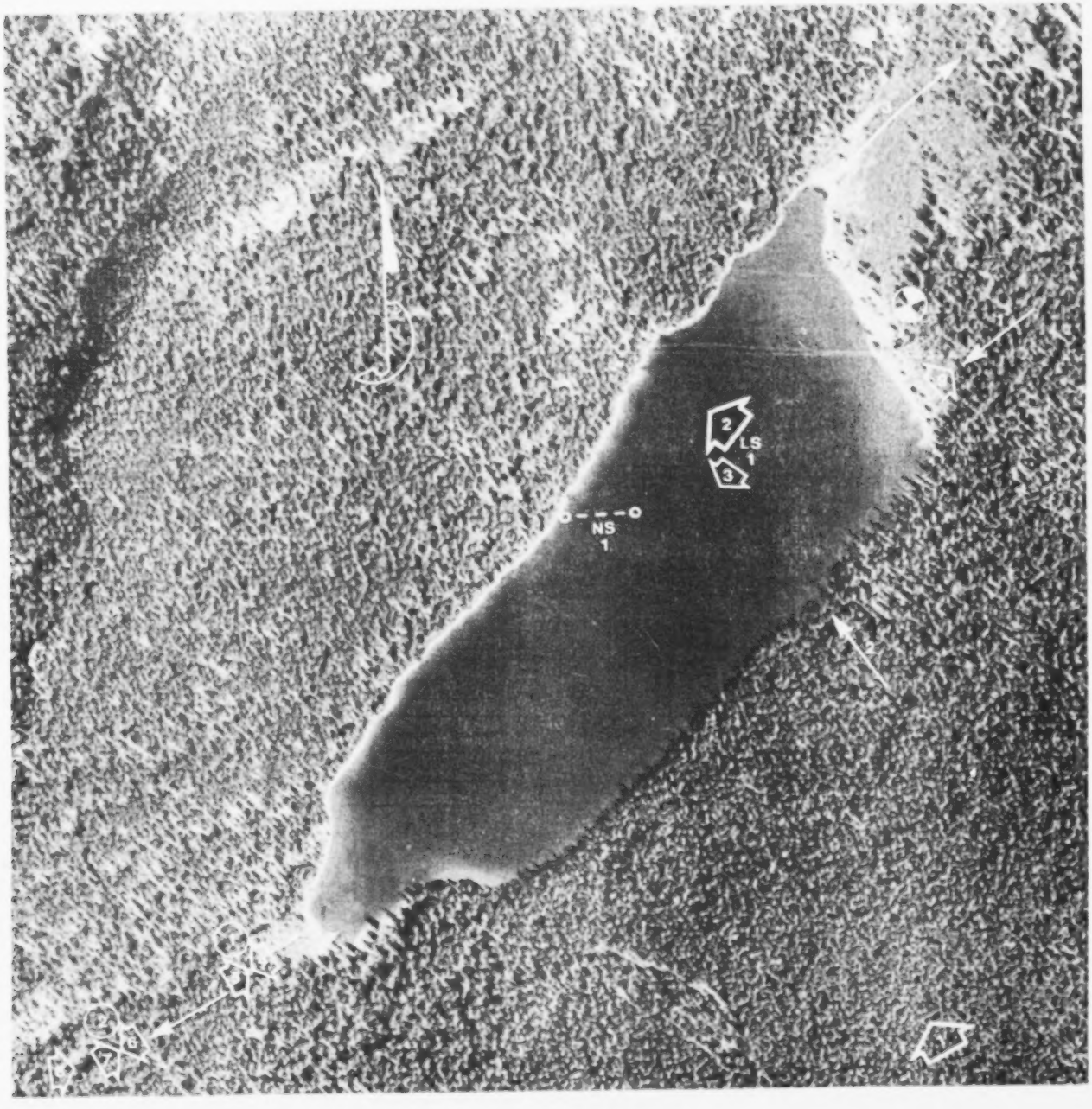
LAKE CATCH SUMMARY

No fish netted.

MINNOW TRAPS:

BAIT: **Sardines**

#	HOURS	DEPTH (m)	SUBSTRATE	SPECIES	SIZE RANGE (cm)
1	7	0.5	organics over fines	Ho fish.	
2	6	1.0	sand, silt shale	No fish; one leech.	



1 Plate number, area, and direction

2 Point sample, number, and location

Bench mark

LS 1 Limno station location and number

NS 1 Netting site location and number

1 Stream flow direction and number

Lake: CANTY

PHOTOGRAPH DIRECTORY

Negative *	Plate *	Description
-	1	Aerial view of Canty Lake looking north.
R5: 23,24,25	2	Panoramic view of Canty Lake shoreline looking north and northeast from the limno station.
R5: 22	3	View of lake looking southwest (toward outlet end) from the limno station.
R5: 20	4	View of point sample site #1 on outlet looking downstream, 50 m downstream from lake.
R5: 19	5	View looking upstream from point sample site #1 on outlet.
R5: 16	6	View looking downstream from point sample site #2 on Canty Lake outlet, 100 m downstream from lake.
R5: 15	7	View looking upstream of point sample site #2 on outlet.
R5: 12	8	View looking upstream at falls on Canty Lake outlet, 175 m downstream of the lake. This upstream fish migration barrier drops approximately 4.5 vertical meters.
R5: 11	9	View looking upstream at intermittent inlet #1 draining into Canty Lake. Flow is due to recent rain and the draining of low-lying areas near the northeast end of the lake.

CANTY LAKE

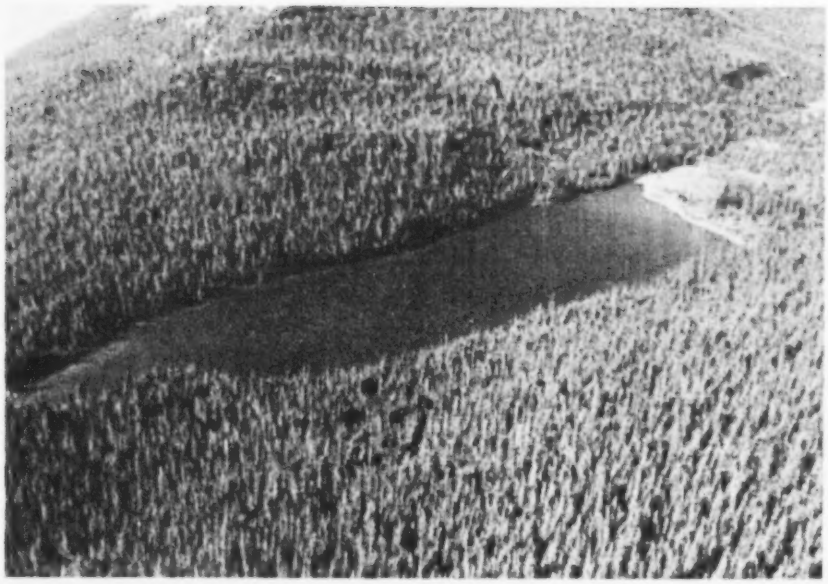


Plate 1: Aerial view of Canty Lake looking north

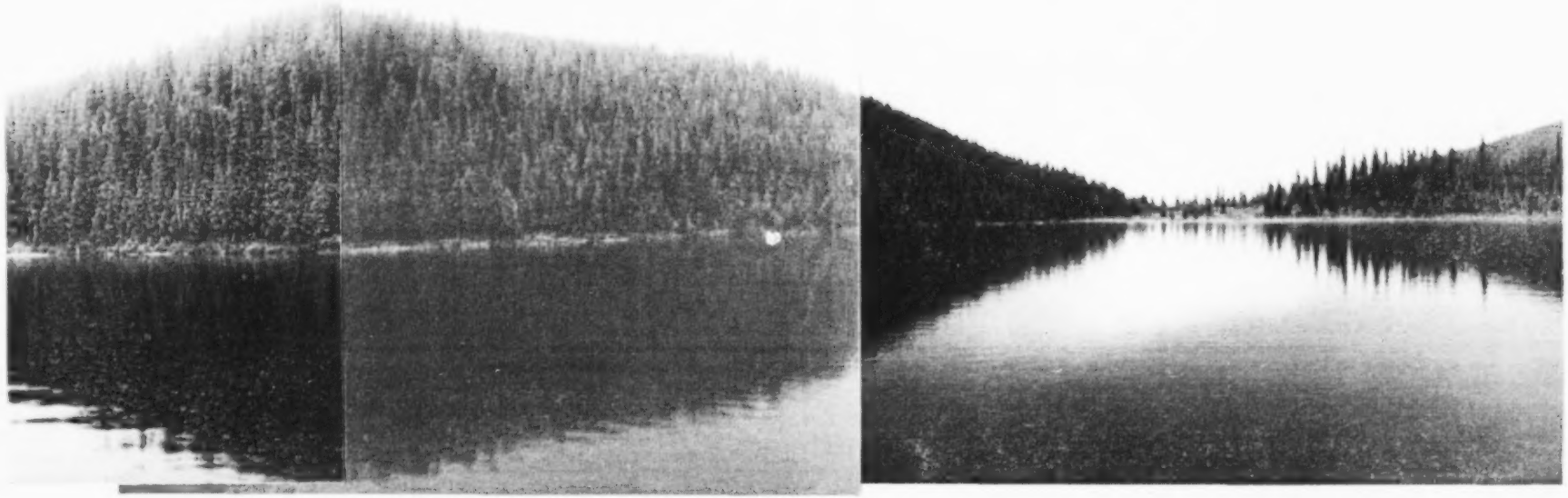


Plate 2: Panoramic view of Canty Lake shoreline looking north and northeast from the limno station.

CANTY LAKE

Plate 3: View of lake looking southwest (toward outlet end) from the limno station.

Plate 4: View of point sample site #1 on outlet looking downstream, 50 m from lake.

Plate 5: View looking upstream from point sample site #1 on outlet.

Plate 6: View looking downstream of point sample site #2 outlet, 100 m downstream from lake.

Plate 7: View looking upstream of point sample site #2 on outlet.

Plate 8: View looking upstream at falls on Canty Lake outlet, 175 m downstream of the lake. This upstream fish migration barrier drops approximately 4.5 Verticle meters.

Plate 9: View looking upstream at intermittent inlet #1 draining into Canty Lake. Flow is due to recent rain and the draining of low-lying areas near the north-east end of the lake.

Lake: CANTY

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

B.C. LABORATORY SERVICES
Report for form 03000056
Peace - Fish Program ATTN: DUANE JESSON

Site: NOSITE CANTY LAKE

Submitted by (00000) DUANE JESSON

Address (07) ~~Waste Management Branch~~ Recreational Fisheries
~~Northern Region~~
~~3rd Floor~~ 1011 4th Avenue
Prince George, BC V2L 3H9

Phone No. 565-6944

Audit Sample ( )
Client study reference code ( )
Sampling agency code (91)

Site (NOSITE) CANTY LAKE

Sample Adjective ( )
Sample State (FW) Fresh Water
Sample Descriptor ( ) Undefined

This form was processed to the computer on 7-JUL-1989 as REGULAR
The cost for analyzing samples for this form is

utine analysis:	$	112.80
pecial analysis:	$	0.00
Total	$	112.80

Site: NOSITE CANTY LAKE

From :89/07/04:0001 To :89/07/04:0001
Depth Range : 0.0 0.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
pH	8.0	pH units	Automated pH Meter (00041220/02/01)
Residue Nonfilt.	< 1	mg/L	Gravi 9 cm Buchner, 105C (00081070/02/01)
Specific Conductance	199	uS/cm	Cond. Meter Siebold (00111160/02/01)
Res. Filterable 1.0u	116	mg/L	Gravimetric 1.0u Filter (007H1032/02/01)
Alkalinity Total 4.5	92.9	mg/L	Automated Electrometer (01021210/02/01)

Site: NOSITE CANTY LAKE

From :89/07/04:0002 To :89/07/04:0002
Depth Range : 9.0 9.0 Tide :
Sample State: Fresh Water
Sample Comment:

Parameter Description	Result	Units	Analytical Technique (Sparcode/Medium/Pres'n)
pH	7.9	pH units	Automated pH Meter (00041220/02/01)
Residue Nonfilt.	1	mg/L	Grav; 9 cm Buchner, 105C (00081070/02/01)
Specific Conductance	199	uS/cm	Cond.Meter Siebold (00111160/02/01)
Res. Filterable 1.0u	108	mg/L	Gravimetric 1.0u Filter (007H1032/02/01)
Alkalinity Total 4.5	93.9	mg/L	Automated Electrometer (01021210/02/01)

Lake: CANTY

Appendix B

TRIBUTARY STREAM DATA

Lake: **CANTY**

System Name: Canty Creek **outlet**

System No.: 25 - ****

Site location: Sample site #1, approximately 50 m downstream from lake.

Channel Width:	1.9 m	Water Temp.:	11°C
Wetted Width:	1.9 m	Stage (flow):	high
Max. Depth:	40 cm	Velocity:	0.36 m/sec
Avg. Depth:	30 cm	Slope:	0.5%
Turbidity:	40 cm	Colour:	gin clear

Flood Signs (height/type):

Creek appears to be near maximum height due to recent heavy rain.

Bed Material: Compaction: low

fines:	5%
gravels:	95% = 80% small gravel (of that 20% is sand)
larges:	-%
bedrock:	-%

Banks (form, height, stability):

Right bank:	undercut 15 cm/30 cm high/very stable
Left bank:	undercut 18 cm/30 cm high/very stable

Comments:

- Small gravel is composed of broken shale.
- Site represents a glide.
- Site flows through an open willow flat.
- Spawning habitat is poor to fair due to the abundance of sand.
- Rearing habitat is fair to good given undercut banks and moderate flow and depth.

Lake: **CANTY**

System Name: Canty Creek outlet

System No.: 25 - ****

Site location: Sample site #2, approximately 100 m downstream from lake.

Channel Width:	1.5 m	Water Temp.:	11°C
Wetted Width:	1.5 m	Stage (flow):	high
Max. Depth:	24 cm	Velocity:	0.67 m/sec
Avg. Depth:	17 cm	Slope:	2%
Turbidity:	24 cm	Colour:	gin clear

Flood Signs (height/type):

Creek appears to be near maximum height due to recent heavy rain.

Bed Material: Compaction: moderate

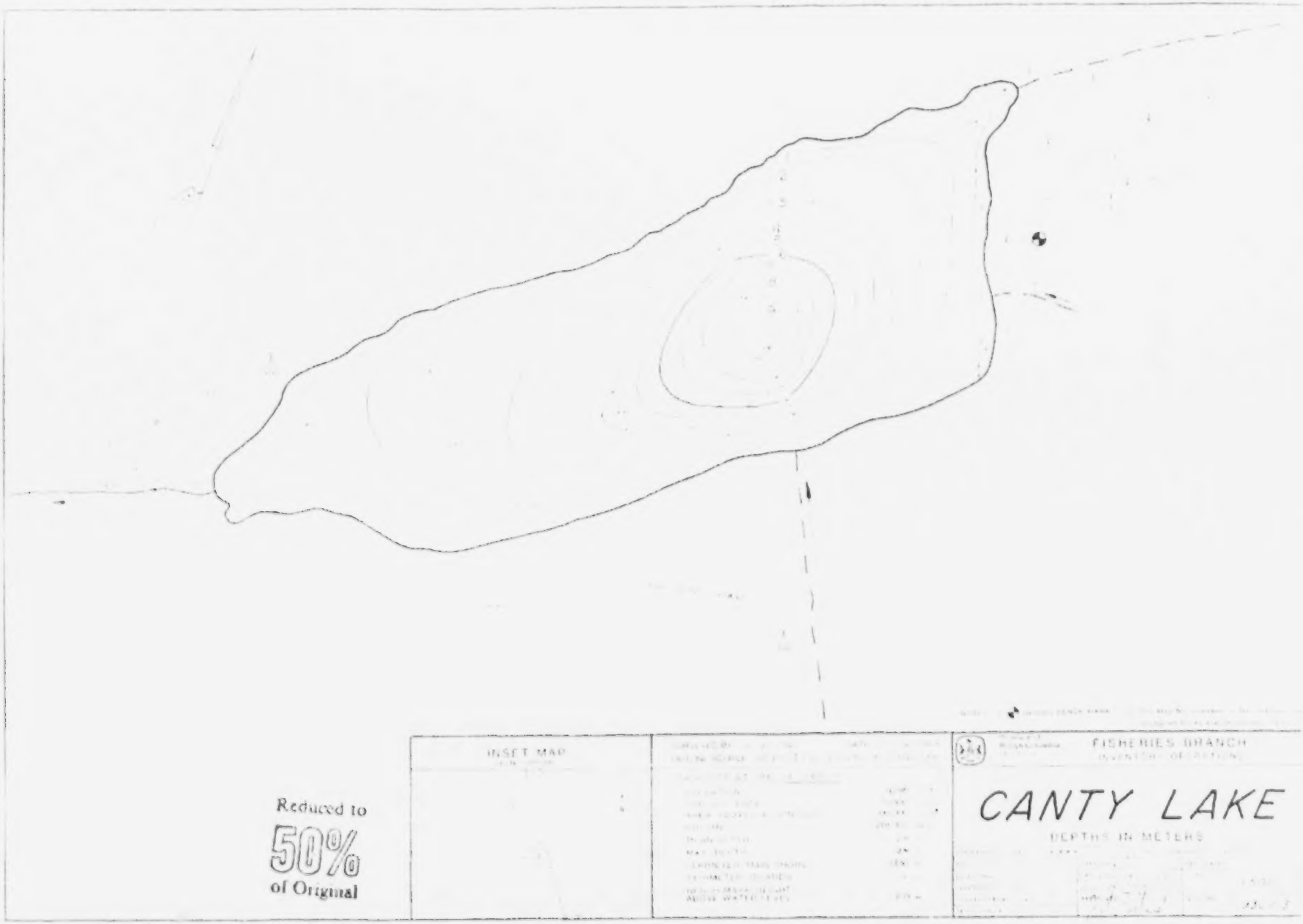
fines:	-%
gravels:	75% = 50% large gravel; 25% small gravel
larges:	25% = 20% cobble; 5% boulder
bedrock	-%

Banks (form, height, stability):

Right bank: undercut 18 cm/60 cm high/very stable
Left bank: undercut 12 cm/27 cm high/very stable

Comments:

- The site is a riffle/run and is representative of the area above the falls. This site is in a separate reach of stream from site #1. The stream at this point is running through a forest.
- Some pool and glide areas upstream and downstream from the site may provide marginal rearing habitat.
- Spawning habitat is fair providing the trout can utilize a combination of shale and gravel material, however, the availability of interstitial spaces in areas of high shale content may be a problem and limit spawning success.



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